

CLHEP project at FNAL



A CEPA/APS/SLD activity
briefing presented 4/9/03





★ Background

- Nature of CLHEP
- Packages
- Relation to of CLHEP to ZOOM

★ Current Situation and Activities

- Consequences of last CLHEP meeting

★ Immediate Plans

★ Critical Issues

★ Longer-range thoughts



Background



★ Nature of CLHEP

- Library of C++ code focused on HEP needs
- Collection of fundamental and un-entangled packages



★ A Bit of history

- Proposed by Leif Lonnblad at CHEP 92
- Pressure to have CERNLIB evolution to C++
 - Kludgy ad hoc pieces would be bad news
 - Direct substitute inappropriate
 - Had to decentralize development
 - Early packages by Lonnblad, Kateyama





Packages in CLHEP today



★ Random

★ Vector

★ HepPDT

★ HepMC

★ StdHep

★ Matrix

★ RandomObjects

★ Geometry

★ Evaluator

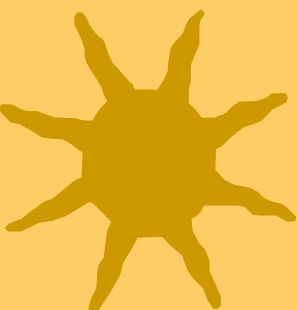
★ Units

★ GenericFunctions



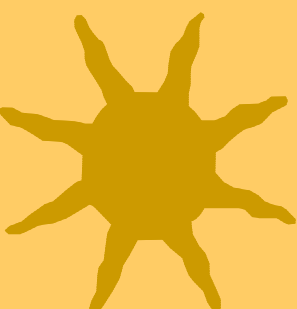


The Organization of CLHEP



★ Organization structure of CLHEP

- Decisions made by consensus of the CLHEP “editors list”
 - package editors
 - key user representatives.
- A. Pfieffer, E. Chernyaev, M. Fischler, L. Garren, W. Brown, J. Boudreau, G. Cosmo, N. Kateyama, L. Lonnblad, Innocente



★ “Annual” CLHEP workshops

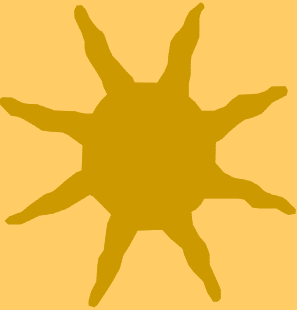
★ Releases every 6 months

★ Rotating chief editor





Where CLHEP fits in at CERN



- ★ This is fluid!
- ★ Currently, a fundamental layer in SEAL
 - SEAL – Anaphe – LHC++ – ***
- ★ Common features:
 - Library
 - Supposed to be building blocks
 - Restricted in what it can depend on
 - Experiments can dictate needs





CLHEP within ZOOM



- ★ ZOOM has a CLHEP package
 - Within this are individual CLHEP packages
 - “Supported”
 - As-Is



- ★ Why CLHEP within ZOOM
 - Rapid responsiveness to discovered Run II needs
 - Uniformity of versions used
 - Uniformity (SRT) of build procedures
 - Ability to make fixes without extensive prior debate





Why ZOOM at all?



★ ZOOM has largely the same purpose and nature as CLHEP

- building block libraries
- clean, free dependencies



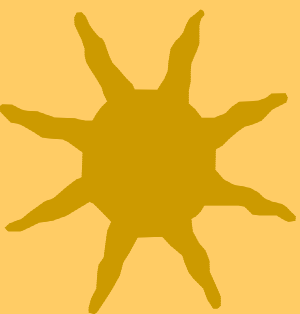
★ But wanted

- own expertise and control
 - FNAL recognition
- responsiveness to needs of Run II
- accommodation to joint compromises of Run II
 - (SRT)





Why ZOOM at all? (2)



- ★ Besides, at the time CLHEP was simply not of high enough standards for soon-to-be-running experiments
 - Design gaffers
 - Wide gaps that we needed filled
 - No mechanism for FNAL to have a say
- ★ Partially better today
 - Changes were made responding to design flaws
 - (or at least accepted!)
 - We do have a voice now



Nature of CLHEP/ZOOM



- ★ Some CLHEP Packages are “production status”

- Vector, Matrix, Random

- ★ CLHEP packages are built via SRT

- “Usual” include paths
- Split of headers one place, sources another
 - CLHEP does this differently

- ★ Net support burden

- about $\frac{1}{2}$ FTE
 - Requested enhancements
 - tracking CLHEP releases





Current Situation and Activities



★ January Workshop

★ Current Status

- Package improvement requests
 - Random
 - Matrix
- Testing and organization needs
- Documentation needs





Consequences of last CLHEP meeting (late January)



★ External input revival

- templatized “vector lite”
- BLAS (yet another linear algebra)
- Await LCG and POOL directions on persistency
- They’d like ErrorLogger from ZOOM



★ One dependency botch to fix

- Matrices filled with Random numbers belongs in RandomObjects





last CLHEP meeting



- ★ Releases semi-annually staggered with G4
- ★ It appeared they were willing to meet our needs for build organization part way
 - Situation changed at very end
 - Matter is up in the air



Immediate Plans



- ★ ZOOM CLHEP package reorganization
 - Physical location structure much like CLHEP
 - Easier communication of changes!
 - Links remain so that no user code breaks
 - Still separate version
 - For responsiveness to FNAL needs
 - Build may change radically
- ★ Intertwined with the ZOOM cleanup and “export” projects



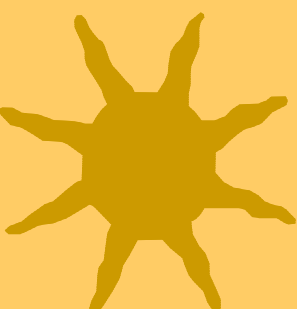


Immediate plans (2)



★ Zoom packages into CLHEP

- ErrorLogger
- CovMatrices?



★ Concrete Requests

- Cut the Matrix dependency on Random

★ New packages

- Minimizer
- Splines



★ How much should we work for CLHEP?



Critical issues



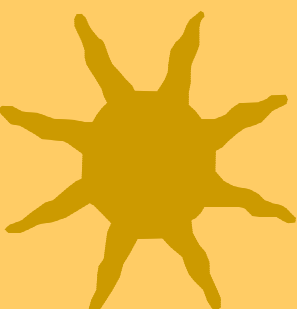
★ Actual Support Procedures

- Late or non-existent CLHEP releases
- Lack of means to distribute quick fixes
 - FNAL version corrects these



★ HepMC

- This code originated from ATLAS
- Some decisions were imposed by “backward compatibility”
- HepMC is smack in the middle of the StdHep trio
 - Lynn can at times run in to unreasonable demands



★ How much will (can) future FNAL efforts depend on CLHEP?



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Longer-Range Possibilities



★ Modified Involvement in Editorship

- “Rotating chief editor”
 - Uncertainties
 - Situation at CERN
 - Don’t feel I can become head while AP is shaky
 - Headaches anyway



★ Other packages

- RCP?
- Persistency?





Critical issues

- ★ Which new major packages go into CLHEP?
 - And who sets policy on these decisions.
 - And are we OK with the answer if it is “CERN”
- ★ How much will (can) future FNAL efforts depend on CLHEP?

